

No.

8900192



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**Rogers NK Seed Co.**

Whereas, THERE HAS BEEN PRESENTED TO THE  
**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BEAN

'Guardian'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 31st day of December in the year of our Lord one thousand nine hundred and ninety-two.

Attest:

*Kenneth Howard*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Howard Madison*  
Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0681-0065

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) <del>Rogers Brothers Seed Company</del> <u>Rogens NK Seed Co. 11/17/93</u>		2. TEMPORARY DESIGNATION D83353	3. VARIETY NAME <u>Guardian</u> JMS 3/28/90
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) P.O. Box 4727 Boise, Idaho 83711		5. PHONE (Include area code) (208) 322-7272	FOR OFFICIAL USE ONLY VPPO NUMBER 8900192
6. GENUS AND SPECIES NAME Phaseolus vulgaris	7. FAMILY NAME (Botanical) Leguminosae	FILING DATE <u>Apr. 19, 1989</u> TIME <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.	AMOUNT FOR FILING \$ <u>1800.00</u> DATE <u>Apr. 18, 1989</u>
8. KIND NAME Dry Edible Bean	9. DATE OF DETERMINATION September 1988	FEE RECEIVED AMOUNT FOR CERTIFICATE \$ <u>200.00</u> DATE <u>Dec. 1, 1992</u>	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation		12. DATE OF INCORPORATION Feb. 25, 1975	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware			
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS <del>Dr. Ronald Shellenberger</del> <u>David Willmot</u> <del>Rogers Brothers Seed Company</del> <u>Rogens NK Seed Co.</u> <del>P.O. Box 4727</del> <u>6338 Highway 20-26</u> <del>Boise, Idaho 83711</del> <u>Nampa, ID 83687</u> 11/17/93 PHONE (Include area code): (208) 322-7272			
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED			
a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)			
b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement.			
c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.)			
d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety.			
e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership.			
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No			
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified	
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S. <input type="checkbox"/> Yes (If "Yes," give date) <u>Sale of product for field trials only.</u> <input checked="" type="checkbox"/> No			
19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKED IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <u>Sale of product for field trials only.</u> <input checked="" type="checkbox"/> No			
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT <u>Ronald Shellenberger - Pulse Marketing Dir.</u>		DATE <u>3/30/89</u>	
SIGNATURE OF APPLICANT <u>Allen E. Hill V. PRES.</u>		DATE <u>3-31-89</u>	



DRY EDIBLE BEAN

~~Guardian~~  
~~D83353~~

EXHIBIT A

ORIGIN AND BREEDING HISTORY

SM5  
3/28/90  
The Dark Red Kidney bean ~~D83353~~ <sup>Guardian</sup> was derived from the following cross pollination in the greenhouse during the spring of 1978:

RED KLOUD-4 x MONTCALM

Details of selection and multiplication:

<u>Year</u>	<u>Generation</u>	<u>Field Number</u>	<u>Bulk Harvest</u>	<u>No. of Single Plant Selections</u>
Summer 1978	F <sub>1</sub>	D78-2204	312 g	
Winter 1978	F <sub>2</sub>	GH D78-77	340 g	
Summer 1979	F <sub>3</sub>	D79-1280		2
Summer 1980	F <sub>4</sub>	D80-0982		2
Summer 1981	F <sub>5</sub>	D81-0929		1
Summer 1982	F <sub>6</sub>	D82-0940	908 g	
Summer 1983	F <sub>7</sub>	D83-0489	3,800 g	
Summer 1984	F <sub>8</sub>	D84-3078	187 lbs.	
Summer 1985	F <sub>9</sub>	D85-2444	1,805 lbs.	
Summer 1986	F <sub>10</sub>	D86-3133	1,370 lbs.	

~~Guardian~~  
~~D83353~~ has been observed to be stable and uniform since the F<sub>6</sub> generation.

Stocks D85-2444 and D86-3133 have been increased to commercial size quantities. Seed Stock will be monitored for purity.



## DRY EDIBLE BEAN

~~Guardian~~  
~~D83353~~

## EXHIBIT B

## NOVELTY STATEMENT

JMS  
3/28/90

Our variety ~~D83353~~ <sup>Guardian</sup> is most nearly like the variety Montcalm, however, it differs in the following areas:

1. ~~D83353~~ <sup>Guardian</sup> has a narrower pod than Montcalm.
2. ~~D83353~~ <sup>Guardian</sup> has a longer pod beak than Montcalm.



Data file PVP83353

Title: PVP ~~83353~~ VS. MONTCALM*Guardian**JMS  
3/28/90*

Function: ANOVA-1

Data case no. 1 to 80

Without selection

One way ANOVA grouped over variable 1

VARIETY

with values from 1 to 2

Variable 5

POD BEAK LENGTH

## ANALYSIS OF VARIANCE TABLE

	Degrees of Freedom	Sum of Squares	Error Mean Square	F-value	Prob.
Between	1	54.4500	54.45	6.81	.010
Within	78	623.7500	8.00		
Total	79	678.2000			

Coefficient of Variation= 22.01%

Var. 1	V A R I A B L E Number	No. Sum	5 Average	SD	SE
1	40.00	547.000	13.68	3.04	0.45
2	40.00	481.000	12.02	2.60	0.45
Total	80.00	1028.000	12.85	2.93	0.33
Within				2.83	

Bartlett's Test

Chi-square = .958476

Number of Degrees of Freedom = 1

Approximate Significance = .3275



POD BEAK LENGTH*Guardian*  
~~D83353~~MONTCALM*JMS*  
*3/28/90*

<u>1988</u>	<u>1987</u>	<u>1988</u>	<u>1987</u>
14 mm.	12 mm.	13 mm.	14 mm.
15 mm.	15 mm.	17 mm.	16 mm.
9 mm.	9 mm.	11 mm.	11 mm.
10 mm.	12 mm.	13 mm.	14 mm.
18 mm.	19 mm.	16 mm.	10 mm.
14 mm.	20 mm.	14 mm.	8 mm.
12 mm.	19 mm.	10 mm.	12 mm.
16 mm.	9 mm.	15 mm.	9 mm.
14 mm.	10 mm.	11 mm.	9 mm.
16 mm.	9 mm.	13 mm.	12 mm.
17 mm.	11 mm.	14 mm.	7 mm.
17 mm.	13 mm.	13 mm.	14 mm.
8 mm.	14 mm.	10 mm.	9 mm.
15 mm.	13 mm.	14 mm.	11 mm.
10 mm.	18 mm.	10 mm.	15 mm.
13 mm.	14 mm.	15 mm.	7 mm.
15 mm.	15 mm.	13 mm.	8 mm.
12 mm.	14 mm.	13 mm.	15 mm.
13 mm.	15 mm.	13 mm.	11 mm.
13 mm.	15 mm.	12 mm.	9 mm.



Data file PVP83353

Title: PVP ~~883353~~ VS. MONTCALM*Guardian**JMS  
3/28/90*

Function: ANOVA-1

Data case no. 1 to 80

Without selection

One way ANOVA grouped over variable 1

VARIETY

with values from 1 to 2

Variable 4

POD WIDTH

## ANALYSIS OF VARIANCE TABLE

	Degrees of Freedom	Sum of Squares	Error Mean Square	F-value	Prob.
Between	1	8.4500	8.45	2.11	.150
Within	78	312.3000	4.00		
Total	79	320.7500			

Coefficient of Variation= 16.50%

Var.	V A R I A B L E	No.	4		
1	Number	Sum	Average	SD	SE
1	40.00	472.000	11.80	1.86	0.32
2	40.00	498.000	12.45	2.14	0.32
Total	80.00	970.000	12.13	2.01	0.23
Within				2.00	

Bartlett's Test

Chi-square = .7544186

Number of Degrees of Freedom = 1

Approximate Significance = .385



POD WIDTH*Guardian*  
D83353MONTCALM*JMS*  
*3/28/90*

<u>1988</u>	<u>1987</u>	<u>1988</u>	<u>1987</u>
13 mm.	11 mm.	15 mm.	12 mm.
14 mm.	10 mm.	13 mm.	10 mm.
15 mm.	12 mm.	15 mm.	10 mm.
8 mm.	14 mm.	13 mm.	10 mm.
14 mm.	10 mm.	15 mm.	14 mm.
15 mm.	10 mm.	14 mm.	11 mm.
15 mm.	12 mm.	15 mm.	8 mm.
8 mm.	13 mm.	15 mm.	13 mm.
13 mm.	12 mm.	14 mm.	11 mm.
13 mm.	10 mm.	15 mm.	9 mm.
11 mm.	12 mm.	13 mm.	10 mm.
13 mm.	11 mm.	15 mm.	12 mm.
13 mm.	10 mm.	14 mm.	13 mm.
13 mm.	10 mm.	14 mm.	12 mm.
13 mm.	10 mm.	14 mm.	8 mm.
13 mm.	10 mm.	14 mm.	10 mm.
12 mm.	10 mm.	14 mm.	10 mm.
13 mm.	9 mm.	13 mm.	10 mm.
13 mm.	11 mm.	15 mm.	10 mm.
13 mm.	10 mm.	13 mm.	12 mm.



U. S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK AND SEED DIVISION

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY  
Dry Edible Bean (*Phaseolus vulgaris* L.)

JMS  
3/28/90

NAME OF APPLICANT(S) Rogers Brothers Seed Company	EXPERIMENTAL NAME D83353	VARIETY NAME D83353 Guardian
ADDRESS (Street and No. or R.F.D. No., City, State, ZIP) P.O. Box 4727 Boise, Idaho 83711	FOR OFFICIAL USE ONLY PVPO NO. 8900192	

Provide data for all characters unless indicated as "optional." Place numbers in the boxes for the characters or numerical values which best describe this variety. Measured data should be the mean of an appropriate number of well spaced (15-20 cm) plants. The Royal Horticulture Society or any recognized color standard may be used to determine plant color. Designate the color system used below.

COLOR SYSTEM USED	LOCATION OF THE TEST(S) TO EVALUATE THIS VARIETY Twin Falls, Idaho
-------------------	---

1. MARKET CLASS	2. MATURITY
-----------------	-------------

<div> <div>9</div> <div>CLASS</div> <div> 1 = Navy (Pea) 2 = Small White 3 = Black 4 = Pinto 5 = Great Northern 6 = Small Red 7 = Pink 8 = Cranberry 9 = Dark Red Kidney 10 = Light Red Kidney 11 = Yellow Eye 12 = Other (specify) </div> </div> <div> <div>CHECK</div> <div> Seafarer Aurora Midnight UI-114 UI-59 NW-59 Viva UI-50 Montcalm Redcloud Steuben </div> </div>	<div> <div>2</div> <div>1 = Early (80-90 days); 2 = Medium (90-100 days); 3 = Late (&gt;100 days)</div> </div> <div> <div> <div>9</div> <div>5</div> </div> <div>Days from planting to harvest maturity 5 year average</div> </div> <div> <div> <div>1</div> <div>5</div> <div>3</div> <div>4</div> </div> <div>Physiological maturity (90% pods dry &amp; buckskin)</div> </div> <div> <div> <div>9</div> <div>5</div> </div> <div>Heat units from planting to harvest maturity (optional). Specify base temperature used: 50 F</div> </div> <div> <div> <div>9</div> <div>5</div> </div> <div>Days from planting to harvest maturity of check variety (use check appropriate to market class shown in item 1)</div> </div>
---	--

3. PLANT HABIT

<div> <div>1</div> <div>TYPE</div> <div> 1 = Ia Bush-determinate, strong and erect stem and branches 2 = Ib Bush-determinate, weak stem and branches 3 = IIa Erect growth habit-indeterminate, guides (runners) short or not developed 4 = IIb Erect growth habit-indeterminate, guides medium to long, with no ability to climb 5 = IIIa Vine-indeterminate, short guides with no ability to climb 6 = IIIb Vine-indeterminate, long guides with ability to climb 7 = IVa Indeterminate climbing, pods distributed throughout the plant 8 = IVb Indeterminate climbing, pods concentrated on the upper part of the plant </div> </div>	<div> <div> <div>3</div> <div>8</div> </div> <div>Average height of mature plant, in cm.</div> </div> <div> <div> <div>3</div> <div>9</div> </div> <div>Average height of check variety, in cm. (use same check as above)</div> </div> <div> <div> <div>3</div> </div> <div>Pod Position: 1 = Low (lower pods touching soil surface) 2 = High (lower pods not touching soil surface) 3 = Scattered (not concentrated high or low)</div> </div> <div> <div> <div>1</div> </div> <div>Adaptability to machine harvest: 1 = Adapted 2 = Not Adapted</div> </div> <div> <div> <div>1</div> </div> <div>Lodging resistance: 1 = Good 2 = Fair 3 = Poor</div> </div>
---	--

4. LEAFLET MORPHOLOGY (Use terminal leaflet of a fully expanded trifoliate)

<div> <div>2</div> <div>1 = Smooth; 2 = Wrinkled</div> </div>	<div> <div>1</div> <div>1 = Dull; 2 = Glossy; 3 = Semiglossy; 4 = Variable</div> </div>
---	---

<div> <div>1</div> <div>SHAPE:</div> <div> 1 = Ovate 2 = Lanceolate 3 = Deltoid 4 = Cordate 5 = Rhomboid </div> </div>	<div> <div>1</div> <div>APEX OF LEAFLET:</div> <div> 1 = Acute 2 = Acuminate 3 = Cuspidate 4 = Obtuse </div> </div>	<div> <div>1</div> <div>BASE OF LEAFLET:</div> <div> 1 = Obtuse 2 = Oblique 3 = Cordate 4 = Cuneate 5 = Attenuate </div> </div>
--	---	---



## 5. FLOWER COLOR AND DAYS TO BLOOM

3 COLOR OF STANDARD: 1 = White; 2 = Cream; 3 = Pink;  
4 = Blue; 5 = Purple

3 COLOR OF KEEL: 1 = White; 2 = Cream; 3 = Pink;  
4 = Blue; 5 = Purple

3 COLOR OF WINGS: 1 = White; 2 = Cream; 3 = Pink;  
4 = Blue; 5 = Purple

4 4 <sup>1st</sup>  
Days to 50% bloom

## 6. POD MORPHOLOGY (Green pod morphology optional)

Green Mature

1 1 COLOR PATTERN: 1 = Solid; 2 = Striped; 3 = Blotched; 4 = Mottled; 5 = Other \_\_\_\_\_

3 4 PRIMARY COLOR: <sup>At physiological maturity</sup>  
1 = Purple; 2 = Red; 3 = Green; 4 = Yellow; 5 = Tan; 6 = Brown; 7 = Other \_\_\_\_\_

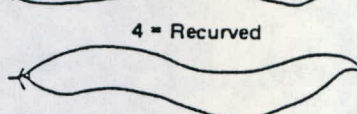
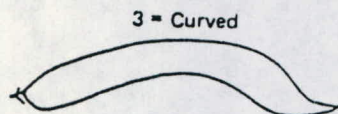
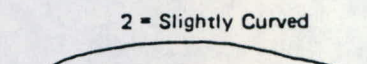
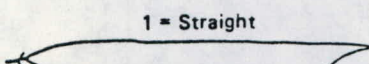
1 1 COLOR MODIFIER: 1 = Light; 2 = Light Medium; 3 = Medium; 4 = Medium Dark; 5 = Dark

SECONDARY COLOR: 1 = Purple; 2 = Red; 3 = Green; 4 = Yellow; 5 = Tan; 6 = Brown; 7 = Other \_\_\_\_\_

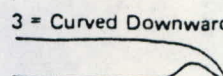
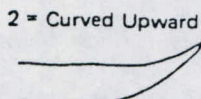
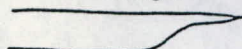
1 1 CROSS SECTION SHAPE: 1 = Flat 2 = Pear 3 = Round 4 = Figure Eight



2 2 POD CURVATURE: 1 = Straight 2 = Slightly Curved  
3 = Curved 4 = Recurved



3 3 POD BEAK ORIENTATION: 1 = Straight 2 = Curved Upward 3 = Curved Downward 4 = Variable  
Average beak length, in cm. 1.368



3 3 CONSTRICTIONS: 1 = None; 2 = Slight; 3 = Deep

4 4 Average number of seeds per pod

## 7. SEED COLOR

1 1 = Shiny; 2 = Dull; 3 = Semishiny; 4 = Variable

1 1 = Monochrome; 2 = Polychrome

7 PRIMARY COLOR: 1 = White; 2 = Yellow; 3 = Buff; 4 = Tan;  
5 = Brown; 6 = Pink; 7 = Red; 8 = Purple;  
9 = Blue; 10 = Black; 11 = Other \_\_\_\_\_

SECONDARY COLOR: 1 = White; 2 = Yellow; 3 = Buff; 4 = Tan;  
5 = Brown; 6 = Pink; 7 = Red; 8 = Purple;  
9 = Blue; 10 = Black; 11 = Other \_\_\_\_\_

1 COLOR PATTERN: 1 = Solid; 2 = Splashed; 3 = Mottled;  
4 = Striped; 5 = Flecked; 6 = Dotted

1 HILAR RING: 1 = Absent; 2 = Present

HILAR RING COLOR: 1 = White; 2 = Yellow; 3 = Buff; 4 = Tan; 5 = Brown; 6 = Pink; 7 = Red;  
8 = Purple; 9 = Blue; 10 = Black; 11 = Other \_\_\_\_\_

## 8. SEED SHAPE AND WEIGHT

4 SHAPE OF SEED TAKEN FROM MIDDLE OF POD: 1 = Round 2 = Oval 3 = Cuboid 4 = Kidney 5 = Truncate Fastigiate



4 5 Dry seed weight in g/100g seeds (adjusted to 12% moisture)

9 10



## 9. ANTHOCYANIN PIGMENTATION

1 = ABSENT  
2 = PRESENT☒ 2 Flowers☒ 1 Stems☒ 1 Pods☒ 1 Seeds☒ 1 Leaves☒ 1 Petioles☒ 1 Peduncles☒ 1 Nodes

## 10. KNOWN DISEASE REACTION

DISEASES - COMMON NAME: Anthracnose, Rust, Powdery mildew, Fusarium root rot, Pythium root rot, Rhizoctonia root rot, Pythium wilt, Sclerotinia white mold, Angular leaf spot, Bacterial wilt, Halo blight, Fuscos blight, Common bacterial blight, Red node virus, Pod mottle virus, Bean common mosaic virus, Bean yellow mosaic virus, Curly top virus, Bacterial brown spot, Bean southern mosaic virus, Other (specify) \_\_\_\_\_

REACTION: 1 = Susceptible; 2 = Resistant; 3 = Tolerant; 4 = Avoidance

(Give the common name (CN), scientific name (SN), and race(s), where applicable)

☒ 2 DISEASE: CN Bean Common Mosaic Virus; SN Marmor phaseoli; Race(s) NY 15 & BV 1☒ 4 DISEASE: CN White mold; SN Sclerotium sclerotiorum; Race(s) \_\_\_\_\_☐ DISEASE: CN \_\_\_\_\_; SN \_\_\_\_\_; Race(s) \_\_\_\_\_☐ DISEASE: CN \_\_\_\_\_; SN \_\_\_\_\_; Race(s) \_\_\_\_\_☐ DISEASE: CN \_\_\_\_\_; SN \_\_\_\_\_; Race(s) \_\_\_\_\_☐ DISEASE: CN \_\_\_\_\_; SN \_\_\_\_\_; Race(s) \_\_\_\_\_

## 11. KNOWN INSECT/NEMATODE RESISTANCE

PESTS - COMMON NAME: Aphids, Bean pod weevil, Bruchid beetle, Corn earworm, Flea beetle, Leaf hopper, Lesion nematode, Lygus, Mexican bean beetle, Root knot nematode, Corn seed maggot, Spider mites, Thrips, Weevils, Western bean cutworm, Other (specify) \_\_\_\_\_

REACTION: 1 = Susceptible; 2 = Resistant; 3 = Tolerant; 4 = Avoidance

(Give the common name (CN), scientific name (SN), and biotype, where applicable)

☐ PEST: CN \_\_\_\_\_; SN \_\_\_\_\_; Biotype \_\_\_\_\_☐ PEST: CN \_\_\_\_\_; SN \_\_\_\_\_; Biotype \_\_\_\_\_☐ PEST: CN \_\_\_\_\_; SN \_\_\_\_\_; Biotype \_\_\_\_\_

## 12. KNOWN PHYSIOLOGICAL STRESS REACTION

1 = Susceptible; 2 = Resistant;  
3 = Tolerant; 4 = Avoidance☐ Heat☐ Cold☐ Drought☐ Air Pollution

Nutrient toxicity or deficiency (specify nutrient) \_\_\_\_\_

Other \_\_\_\_\_

## 13. COMMENTS



## DRY EDIBLE BEAN

*Guardian*  
~~D83353~~

## EXHIBIT D

## BOTANICAL DESCRIPTION

JMS  
3/28/90

Dark Red Kidney bean ~~D83353~~ *Guardian* is an upright variety with well filled pods and a fairly small plant. It has a Type IA plant habit.

~~D83353~~ *Guardian* matures in 95 days (5 year average) in Twin Falls, Idaho, which is the same as Montcalm (maturity defined as 90% of pods turned from green to buckskin).

~~D83353~~ *Guardian* has resistance to the NY 15 strain of Bean Common Mosaic Virus.

The seed size of ~~D83353~~ *Guardian* averages 1002 seeds per pound compared to 976 seeds per pound for Montcalm. In canning tests, ~~D83353~~ *Guardian* produces canned product comparable to Montcalm's quality.

~~D83353~~ *Guardian* has out yielded Montcalm by an average of 47 pounds per acre in Twin Falls, Idaho, for the years 1983-1987.

~~D83353~~ *Guardian* has shown adaptability in the production areas of Idaho, New York and Washington.



## DRY EDIBLE BEAN

*Guardian*  
~~D83353~~

## EXHIBIT E

## APPLICANT'S OWNERSHIP

*JMS*  
*3/28/90*

Variety ~~D83353~~ *Guardian* was developed by Ronald Shellenberger, Ph.D., a Rogers Brothers Seed Company plant breeder, with Rogers Brothers Seed Company funding the development of the variety. By agreement between employees and Rogers Brothers Seed Company, all rights to any variety developed by employees are assigned to the Company. No rights to such varieties are retained by employees.



*State of Delaware*  
*Office of the Secretary of State*

---

PAGE 1

I, WILLIAM T. QUILLEN, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THAT THE SAID "ROGERS NK SEED CO.", FILED A CERTIFICATE OF AMENDMENT, CHANGING ITS NAME TO "ROGERS SEED CO.", THE FIFTH DAY OF MAY, A.D. 1994, AT 9 O'CLOCK A.M.



*William T. Quillen*

*William T. Quillen, Secretary of State*

0810041 8320

944080001

AUTHENTICATION: 7120759

DATE: 05-16-94



CERTIFICATE OF AMENDMENT  
OF  
CERTIFICATE OF INCORPORATION  
OF  
ROGERS NK SEED CO.

Adopted in accordance with the provisions  
of Section 242 of the General Corporation  
Law of the State of Delaware

EFFECTIVE DATE: June 1, 1994

We, Willem van Overschot, President, and Richard B. Geller, Secretary, of Rogers NK Seed Co., a corporation existing under the laws of the State of Delaware, do hereby certify as follows:

FIRST: The Certificate of Incorporation of the corporation was filed on 2/27/75.

SECOND: The Certificate of Incorporation of said corporation has been amended as follows:

By striking out the whole of Article I thereof as it now exists and inserting in lieu and instead thereof, a new Article I, reading as follows:

ARTICLE I

Name

The name of the Corporation is ROGERS SEED CO.

THIRD: Such amendment has been duly adopted in accordance with the provisions of the General Corporation Law of the State of Delaware, by the unanimous written consent of all of the stockholders entitled to vote in accordance with the provisions of Section 228 of the General Corporation Law of the State of Delaware.

FOURTH: See attached Written Consent of Sole Shareholder and Board of Directors' Resolution.

IN WITNESS WHEREOF, we have signed this certificate this 13<sup>th</sup> day of April, 1994.

Willem van Overschot  
Willem van Overschot, President

Richard B. Geller  
Richard B. Geller, Secretary



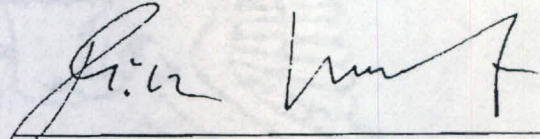
ROGERS NK SEED CO.

WRITTEN CONSENT OF SOLE SHAREHOLDER

SANDOZ CORPORATION, owner of all of the issued and outstanding shares of ROGERS NK SEED CO., hereby consents, pursuant to Section 228 of the Delaware General Corporation Law, to the adoption of the following resolution as and for the act of the shareholder:

RESOLVED, that SANDOZ CORPORATION, as sole shareholder, approves the amendment to Article I of the Certificate of Incorporation of ROGERS NK SEED CO., changing its name to **ROGERS SEED CO.**

Dated: April 22, 1994

  
Heinz P. Imhof,  
Chief Executive Officer  
Sandoz Corporation



ROGERS NK SEED CO.

**RESOLUTION**

RESOLVED, that according to Section 242 of the General Corporation Law of the State of Delaware, that Article I of the Certificate of Incorporation be amended, effective June 1, 1994, to read as follows: The name of the Corporation is **ROGERS SEED CO.**; and, further,

RESOLVED, that the appropriate officers of Rogers NK Seed Co. be, and they hereby are, authorized to take any and all further action and execute and deliver any and all further documents that may be necessary or desirable in order to carry out and effectuate fully the purposes set forth in the foregoing resolution.

ADOPTED UNANIMOUSLY BY THE BOARD  
MARCH 31, 1994

Richard B. Geller

Richard B. Geller, Secretary



*State of Delaware*  
*Office of the Secretary of State*

---

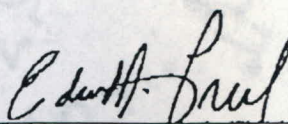
PAGE 1

I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF MERGER, WHICH MERGES:

"ROGERS SEED CO.", A DELAWARE CORPORATION,  
WITH AND INTO "NOVARTIS SEEDS, INC." UNDER THE NAME OF  
"NOVARTIS SEEDS, INC.", A CORPORATION ORGANIZED AND EXISTING  
UNDER THE LAWS OF THE STATE OF DELAWARE, AS RECEIVED AND FILED  
IN THIS OFFICE THE TWENTY-FIFTH DAY OF JUNE, A.D. 1997, AT 9  
O'CLOCK A.M.

A CERTIFIED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO  
THE NEW CASTLE COUNTY RECORDER OF DEEDS FOR RECORDING.



  
\_\_\_\_\_  
Edward J. Freel, Secretary of State

0829320 8100M  
971211787

AUTHENTICATION: 8531908  
06-26-97

DATE:



STATE OF DELAWARE  
SECRETARY OF STATE  
DIVISION OF CORPORATIONS  
FILED 09:00 AM 06/25/1997  
971211787 - 0829320

CERTIFICATE OF MERGER  
OF  
ROGERS SEED CO.  
INTO  
NOVARTIS SEEDS, INC.

The undersigned corporation organized and existing under and by virtue of the General Corporation Law of Delaware,

**DOES HEREBY CERTIFY:**

**FIRST:** That the name and state of incorporation of each on the constituent corporations of the merger is as follows:

<b>NAME</b>	<b>STATE OF INCORPORATION</b>
Novartis Seeds, Inc.	Delaware
Rogers Seed Co.	Delaware

**SECOND:** That an Agreement and Plan of Merger between the parties to the merger has been approved, adopted, certified, executed and acknowledged by each of the constituent corporations in accordance with the requirements of section 251 of the General Corporation Law of Delaware

**THIRD:** That the name of the surviving corporation is Novartis Seeds, Inc.

**FOURTH:** That the Certificate of Incorporation of Novartis Seeds, Inc., a Delaware corporation which will survive the merger, shall be the Certificate of Incorporation of the surviving corporation.

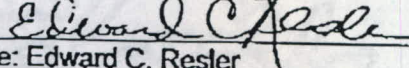
**FIFTH:** That the executed Agreement and Plan of Merger is on file at the principal place of business of the surviving corporation, the address of which is 7500 Olson Memorial Highway, Golden Valley, MN 55427.

**SIXTH:** That a copy of the Agreement and Plan of Merger will be furnished by the surviving corporation, on request and without cost, to any stockholder of any constituent corporation.

**SEVENTH:** That this Certificate of Merger shall be effective on July 1, 1997.

Dated June 23, 1997

NOVARTIS SEEDS, INC.

By:   
Name: Edward C. Resler  
Title: Vice President & General Counsel